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ABSTRACT

Content analysis is a systematic and objective technique which reduces into smaller sub-parts existing communications. It is the analytical reduction of a text to a standard set of statistically manipulatable symbols representing the presence, intensity, or frequency of characteristics. A case study of the use of content analysis is the U.S. Forest Service's formulation in the early 1970s of a development policy for the Shawnee National Forest in southern Illinois. The alternatives were: no projects, new limited access highway, combination scenic drive and trail, national scenic trail, and improve existing roads. Three hundred documents expressing public opinion were analyzed according to various categories, given a numerical score, and cross tabulated. On the basis of the assumption that people's attitudes regarding the alternative were related to underlying concerns and factors, which when subjected to multiple correlation analysis could be used to predict attitudes, the content analysis verified the decision to opt for the scenic route over the existing road system. As a method of describing, understanding and explaining, predicting, and deciding, especially in cases where available data is not in the form required, content analysis is a reliable and valid research method and central to the development of adult education. (Author/JR)

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CONTENT ANALYSIS: A METHOD FOR RESEARCH AND EVALUATION IN ADULT EDUCATION*

Many data now exist which to varying degrees are relatively useless for evaluation and research purposes. These data exist as logs, diaries, newspaper articles, resolutions, and other narrative communications. They are organized for their original purpose but unorganized for research purposes. They are adequate in quantity for original purposes but become too voluminous when combined. They, therefore, need reductions to manageable forms. Content analysis is a method which can serve these functions.

What is Content Analysis?

Content is central in the communication and education process. Communication content is the body of meanings conveyed through symbols, which make up the communications itself.

Since communication content is so influenced by the countless aspects of human experience, and its causes so varied, a systematic method has been developed--and is being further developed--to describe the various facets of communication content in summary fashion. This method is called content analysis.

A review of several definitions in the literature identified six major characteristics of content analysis:

1. It applies only to social science generalizations. (Leites and Pool 1942)
2. It applies only or primarily to determining the effects of communication (Waples and Berelson 1941)
3. It applies only to the syntactic and semantic dimensions of language. (Lietes and Pool 1942)

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4. It must be Objective. (Waples and Berelson 1941, Leites and Pool 1942, Janis 1943, Kaplan 1943.)

5. It must be Systematic. (Leites and Pool 1942, Kapland and Goldsen 1949, Kaplan 1943)

6. It must be Quantitative. (Waples and Berelson 1941, Leites and Pool 1942, Kapland and Goldsen 1949, Janis 1943, Kaplan 1943)

Anderson etal (1975) say content analysis is a general assessment technique by which complex phenomena (e.g. ....compositions, adult conversations, text books.) can be reduced to simpler terms. (e.g. work frequency counts, categorizations of the content of conversations, readability scores.) p. 82. It can be modified to obtain many types of research and evaluation data.

To summarize, content analysis is a technique for systematic, objective and quantitative description of communications for use in the social sciences including adult education. It provides reduction of existing, written communications data such as letters, and resolutions to simpler and fewer terms. These fewer terms are primarily numerical counts of the existence of certain expressions, but also the frequency and intensity to which those expressions are present.

We've found the technique to have demonstrable use in analyzing a situation, needing decision making on planning alternatives, i.e., a situation which had inherent potential for adult education program development. We have found several purposes can be served by the technique. This paper summarizes these experiences in that situation illustrates those purposes, and discusses further general applications.

A Case Study Using Content Analysis

In the early 1970's, the U.S. Forest Service faced the problem of

deciding on the future development policy in the Shawnee National Forest, in southern Illinois. Specifically its question was: should future policy aim at: 1) preserving the Shawnee as it is, 2) enhancing wider usage of the Shawnee's resources, 3) providing economic benefits to southern Illinois and the surrounding area, 4) helping people enjoy the aesthetic and ecological offerings of the Shawnee or 5) a combination of these alternatives. (Forest and Flitter, 1974)

Within these policy questions, the Forest Service, in 1973 needed to decide between specific, immediate transportation and usage alternatives:

1. Develop no projects
2. New limited access highway
3. Combination scenic drive and trail
4. National scenic trail
5. Improve existing roads, and
6. Other alternatives

As described by the PDK study committee on evaluation (1971), The Forest Service's decision-making occurred in four stages: 1) becoming aware of a needed decision; 2) designing the decision situation; 3) choosing among alternatives; and 4) acting upon the chosen alternative.

Much of the first stage was completed by the time this study began. This study dealt with the second and third stages of the decision making process. Stage four is reported herein.

The specific purpose of this project thus became: to determine the attitudes of interested publics toward the six planning alternatives, and the factors related to these attitudes, so that the U.S. Forest Service could give some consideration to public input in deciding on

which alternatives to implement. The methods of data collection, analysis, interpretation, and conclusions are summarized below.

Summary of Study Procedures

1. Public hearings were held (June and September, 1973) in southern and central Illinois. These hearings were transcribed. The transcriptions and prepared statements became data for analysis.
2. Forest Service files at the Shawnee Supervisor's office were searched. Related letters and other documents from the later 1960's and early 1970's were included in study.
3. Forest Service invited opinions and expressions of support or disagreement, and reasons from key persons they worked with. (i.e., community leaders, Sierra Club, conservancy districts, etc.)
4. Newspapers were searched for relevant content. (feature articles, editorials, news articles from Chicago, and local southern Illinois papers)
5. Copies of state and federal legislative actions were secured. (bills, resolutions)
6. The 300 eventual documents were numbered, duplicated and divided into eight categories plus miscellaneous.

Category	Number
1. Editorials and letters to editors	3
2. Feature articles and news articles	84
3. News releases from Forest Service	4
4. Transcripts of public meetings	50
5. Legislation correspondence	21

Category	Number
6. Unsolicited letters from citizens	101
7. Bills and resolutions	19
8. Petitions	2
9. Miscellaneous	18

7. A coding form and a key sheet were developed. They were categorized to be compatible with computer card orientation. Answers on the code sheet were directly key punched for computer programming. (See appendix A for specific variables) The general variables coded by the content analyzers were:
   a. Identification of the document
   b. Document type
   c. Content analyzer's identification
   d. Date of the documents
   e. Expression of approval or disapproval of each of the six possible alternatives.
   f. Factors expressed by choice of respondent as reasons or concerns in their alternative.
   g. Population affiliations, sex, and occupation of the population respondents.
8. Seven "judges" or content analyzers were chosen from varied backgrounds who did not previously know each other and had independent, different professional training.(educatory, economics, soils, recreation, and environment) This panel of analyzers objectified their perceptions, reduced bias and their scores provided a chance to check reliability of their perceptions.

9. The seven content analyzers were trained to do content analysis in group sessions by the project directors, so that all instructions were consistent. All were given the same interpretations, directions, and explanations of the project, its objectives, their tasks, the code sheets and the key sheets.

10. The seven content analyzers worked independently in coding the 300 documents according to the key sheet.

The procedure used by each content analyzer was as follows: They would take a letter such as:

> Dear Mr. Hendricks:
>
> As a life-long resident of southern Illinois, I believe it is about time, the Shawnee Forest served the needs of the local people. We need economic and business development here, but we also need our beautiful natural resources preserved. If we don't have those we don't have anything.
>
> Therefore, I feel you should not build a new super highway through our area. If tourists need a place to drive, help us improve our existing roads. I strongly urge you to do this in considering our needs.
>
> Sincerely,
>
> Marcus Anderson

Each analyzer would look at this document and decide if the respondent was advocating a position. In the above example Marcus Anderson was obviously advocating the improvement of existing road alternative. The analyzer would judge how strongly the person was for it. In Mr. Anderson's case, a judge might interpret his feelings strongly positive and circle 5 for alternative V. The other six judges might have given 4, 5,3, 2, 5, and 5 to the letter regarding alternative V.

All 45 variables on the score sheet were scored this way by each content analyzer. If expression or data on certain variables were not perceived to be in the document, the content analyzer would circle (0) zero on the score sheet for that variable.

11. Once each of the content analyzers had completed their analysis of the 300 documents, statistical analyses were undertaken. First, the judgments of each analyzer on each variable for each document were averaged so that each document would have but one score on each of the 45 variables.

12. When the reactions of the seven-judge panel toward each of the 45 variables were averaged into one score, the final stage of analysis used the 45 scores for each of the 300 documents. These scores gave us the attitude summaries and the respondent characteristics related to their attitudes.

13. Statistical procedures used to summarize, describe, analyze, and interpret the data included:

    1. Frequency and percentage distributions in each of the nine categories Certain categories were limited to this treatment because of limited numbers of documents in those categories. 30 to 40 documents in a category were the minimum for further analysis.

    2. Cross tabulations, Pearson's Product-Moment-Correlation, (r), and Multiple Correlation (R) were computed on certain data to see which factors and/or clusters of factors were related to attitudes towards the alternatives. An arbitrary minimum of .400 was set as an acceptable Multiple R.

14. Computerized results were analyzed and compiled in report form, as a rough draft for reaction by other persons.
15. The final draft of the study was presented to the U.S. Forest Service.

RESULTS

Reliability of the content analyzers was determined by determining the degree to which each judge agreed with the majority of judges on each question. The percentages of how much each analyzer was congruent with the other six were as in Table 1.

Table 1

Reliability of Content Analyzers

Analyzer	% Congruence
1	75.3
2	86.2
3	78.0
4	84.2
5	79.9
6	77.3
7	81.5

The content of these 300 documents when analyzed showed attitudes towards the alternatives as shown in Table 2.

TABLE 2

Summary of Attitude Frequencies Towards the Alternatives

Planning Alternative	Attitudes		
	Negative	Neutral	Positive
1. Do Nothing	37	236	27
2. Limited access highway	40	50	210
3. Combination Road and trail	4	284	12
4. Scenic trail	3	286	11
5. Improving existing roads	5	251	44

As shown, the only alternative receiving substantial expressions of positive attitudes was the limited access highway (alternative 2). Expressions toward the other alternatives were generally neutral or nonexistent.

As stated, data on other variables besides attitudes were determined through analysis. Understanding these was very important to the complete picture and meaning of the attitudes.

1. The analysis determined people in 1973 were much more positive toward the alternatives of "doing nothing" and "improving existing roads", and more vocally negative towards the limited access highway, than they were in previous years.

2. Attitudes depend on or relate to certain underlying concerns and factors. The factors of land, water, and nature based recreation; community needs; individual needs; the economy; politics; mining; logging; travel and transportation; education and science, and protection of the environment all influenced the thinking and attitudes of people. The specific effects can only be cited by referring to the specific alternatives and data category. These concerns must be part of the summary, analysis, and usage of the attitudes. Some of these relationships as existed in the public hearings transcript content are presented in Table 3.

As Table 3 shows, certain concerns were negatively related (i.e., expressions in documents on concern for the protection of the environment, were negatively correlated -.684 with positive attitudes towards limited access highway). Expressions of concern for the economy, however, showed a positive correlation of .555 with positive attitudes towards the new highway alternative.

TABLE 3

Factors Related to Positive Attitudes

Expressed Positive attitudes toward:	Relates to Expressed Concern For	"r"
1. Do nothing	Community needs	-.419
	Individual needs	-.358
	Economy	-.513
	Education	.499
	Protection of environment	.461
2. Limited access highway	Water recreation	.375
	Community needs	.508
	Economy	.555
	Education	-.401
	Protection of environment	-.684
3. Combination road and trail	Water recreation	.381
	Community needs	.410
	Economy	.290
4. Scenic trail	No factors related	
5. Improve Existing Roads	Community Needs	.293
	Transportation	.284
	Protection of environment	.376

When all expressed concerns or factors determined through analysis were combined to see which clusters of concerns most efficiently predicted attitudes towards the alternatives, the clusters in Table 4 with accordant multiple correlations resulted.

TABLE 4

Multiple Correlations of Alternatives and Concerns

Alternative	Expressed Concerns	Multiple "R"
1. Do Nothing	Economy Individual needs Education Politics Protection of environment	.789
2. Limited access highway	Protection of environment Community needs Economy	.818
3. Combination road and trail	Water recreation Community needs Education Protection of environment Individual needs Transportation	.584
4. Scenic trail	None	No Strong Multiple "R"
5. Improve existing roads	Community needs Individual needs Protection of environment Education Politics	.617

As Table 4 shows, a multiple correlation of .789 resulted between five clustered concerns (the economy, individual needs, education, politics, and protection of environment) and the do nothing alternative. In other words, to know a person was concerned for all five of these concerns allows us to predict his/her attitude toward the do nothing alternative with relative certainty. With even more certainty, expressed concerns (or lack of them) for the environment, the economy, and community needs predict attitudes toward the limited access highway with a .818 Multiple "R".

The transcripts of public hearings more than any other category identified factors which could be considered underlying reasons or concerns related to peoples' attitudes. Knowing the importance, those participating in the hearings attached to such factors as the economy, protection of environment, community needs, transportation, and water recreation allowed us to know with a fair certainty how they viewed the five alternatives and why.

Summary of Study Results

1. The limited access highway alternative without question had more expressed positive attitudes than any other alternative.
2. The limited access highway was however, the most controversial or polarized of the alternatives. Though many people expressed positive attitudes toward it, many others expressed negative attitudes and people were unlikely to remain neutral on this alternative.
3. Attitudes toward the other four alternatives were primarily neutral, most likely reflecting disinterest or lack of awareness.
4. The attitudes towards the five alternatives were very dynamically changing at the time of the study. Specifically, the positive attitudes towards the limited access highway are declining

while the negative attitudes are increasing. People areaalso becoming less neutral and more positive towards the alternatives of do nothing and improvement of existing roads. It may be several years before all persons of the types whose expressed attitudes were analyzed here have crystallized an attitude or position towards each of the alternatives.

5. If the attitudes of the public were to be considered in the decision, their underlying concerns or reasons for their attitudes must be considered. They were considered by the U.S. Forest Service.
6. Forest supervisor, Charles Hendricks, announced on August 23, 1974 that the Forest Services' review of all public input indicated the most acceptable alternative was a scenic route over the existing road system. This decision was due in large part to the findings of the study which showed increasing resistance to major construction changes which would expend huge sums of money and disrupt the area's eco-system. This fact along with an increasing need for economical help and increased usage of the Shawnee helped make the decision.

Findings of this study supporting the decision included increasing positive attitudes toward the alternative related to concerns for water recreation, nature recreation, protection of the environment, community needs, individual needs, education, and the politics of the situation.

Summary and Conclusions

We have defined content analysis as any systematic and objective technique which can reduce into smaller sub-parts, existing communications. It is the analytical reduction of a text to a standard set of statistically manipultable symbols representing the presence, intensity, or frequency of characteristics.

The procedures used in this study show content analysis can be a reliable way to make currently existing written materials more useable. The code sheet was developed specifically for the purpose of helping the Forest Service make a decision on alternatives. The procedure did not correspond directly to content analysis procedures advocated by journalism and communications media disciplines, and it should not. Instead, by developing a code sheet indicating the specific things to be analyzed by a panel of judges, the procedure can be adapted and changed to meet the various purposes we have in research and evaluation.

What are these purposes? How useful is the general procedure of content analysis to adult education research? We feel the usefulness of the procedures depend on knowing your specific purposes. We found four general purposes were reached in this case study. These four purposes are presented in Table 5 with our specific experiences, plus other examples.

TABLE 5

Content Analysis Purposes

	PURPOSE			
	to describe:	to understand & explain:	to predict:	to decide:
Shawnee Case Study Experience	-attitudes toward -alternative	-reasons for attitudes -factors of possible significance	-level of acceptance of alternatives -possible usage -changes in attitudes	-on alternative to implement -when to implement
Other Illustrations	-purchasing patterns of people -levels of support -difficulty of textbooks -treatment of experiments -existing attitudes, values, priorities, and commitments -congruence between written program goals & methods	-existing community systems -levels of participation	-participation in programs -monetary support levels for programs. -success of programs -job performance	-what programs to offer -on further questions & needed surveys. -program priorities -needed further research

In using content analysis, we can combine it with other empirical measurement techniques such as surveys, knowledge tests, attitude scales, and observations. In many cases, however, content analysis is a technique which can be a useful substitute for these other methods, especially when much existing but unorganized data already exists.

In adult education we have at our disposal numerous sources of data for our research, which can be quantified by content analysis. These sources include logs and diaries, field reports, newspapers and magazines, transcripts of meetings and formal programs, management information, narrative reports, legal docuemtns (such as bills, resolutions, statutes, codes, and laws), petitions, inter- and intra-office communications and historical documents.

In summary, sometimes the data we have provide information roughly in the form required. However, many other times, particularly when we seek to measure subjective aspects of clientele phenomena, such as the current values or opinions in a population, we must begin with text meaningless for our purposes that must somehow be processed to produce the classifications we require. At these times we see content analysis as a reliable and valid research method, central and not merely peripheral, to the development of adult education. This is especially true when we are sure of our purpose, have simple categories, explicit instructions, and well-trained analyzers.

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